#### Hazardous Waste Section

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Mark Wilkins
Hydrogeologist
North Carolina Department Environment and Natural Resources
Hazardous Waste Section
401 Oberlin Rd. – Suite 150
Raleigh, North Carolina 27605

Subject:

Soil Gas Sampling Results in the Vicinity of an Unnamed Tributary to South Buffalo Creek, Former Ashland Distribution Company, 2802 Patterson Street, Greensboro, North Carolina. EPA ID No: NCD 024 599 011

Dear Mr. Wilkins:

ARCADIS is pleased to submit this report on behalf of Ashland Inc. (Ashland) for soil gas sampling activities performed near an unnamed tributary to South Buffalo Creek (the "unnamed tributary") that originates approximately 1,200 feet (ft) southeast of the former Ashland facility in Greensboro, North Carolina (see Figure 1). This soilgas investigation was performed in November 2010 to evaluate whether chemicals in soil gas are above the North Carolina Department of Environment and Natural Resources (NCDENR), Inactive Hazardous Sites Branch (IHSB) screening levels for residential and industrial/commercial properties. This report also is a partial response to your letter dated December 14, 2010, that requested Ashland to evaluate potential risks to human health from the vapor intrusion pathway into indoor air within businesses and residences south of Immanuel Road. Additional investigations are being planned to further assess the potential for human and ecological exposures due to chemical impacts to groundwater, surface water, and indoor air.

#### **Background**

In 2009 and 2010, ARCADIS conducted environmental file reviews at various NCDENR and Guilford County Health Department offices for facilities located within the approximate watershed basin of the unnamed tributary. Results of file reviews were presented in the *Work Plan for Soil Gas Survey near a Small Tributary to South Buffalo Creek*, submitted to NCDENR on July 8, 2010. The environmental files indicated that, in addition to the former Ashland site located at 2802 Patterson Street,

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**ENVIRONMENTAL** 

Date

February 28, 2011

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Our ref:

OH004000.NC04.11301

ARCADIS G&M of North Carolina, Inc.

NC Engineering License # C-1869 NC Surveying License # C-1869 there are many other potential commercial/industrial sources for constituents detected within the drainage basin of the unnamed stream including:

- ECOFLO® Inc. (ECOFLO®) located at 2750 Patterson Street,
- Hazardous Substance Disposal Site (HSDS) at 3880 Immanuel Road,
- Sunset Dry Cleaners located at 2615 Highpoint Road,
- 1-Hour Martinizing located at 2519 Highpoint Road,
- Flint Ink located at 2805 Patterson Street,
- Dow Corning Corp. (Dow Corning) located at 2914 Patterson Street,
- NC DOT Site#61 at the Norfolk Southern rail yard at 1124 S. Holden Road,
- · Chemicals and Solvents, Inc. (Chemsolv) located at 2804 Patterson Street,
- Sherwin Williams located at 1025 Howard Street, and
- Vertellus (Former Morflex Chemical Co./Pfiezer) at 2110 High Point Road.

Ashland is in the process of planning and/or conducting additional investigations to evaluate the extents of impacts on Ashland's former facility, and has been reaching out to NCDENR to evaluate the potential for contributions from some of the facilities listed above.

#### Regional Soil Gas Survey

ARCADIS conducted a passive soil gas sampling survey using Gore<sup>TM</sup> Modules to evaluate potential sources, and to delineate potential impacts in the vicinity and hydraulically downgradient of the facilities identified in the file review referenced above. ARCADIS submitted results of the initial soil gas survey to NCDENR in the letter report titled *Proposed Refinements to the Existing Remedial Strategy* on September 20, 2010. The results of the passive soil gas survey indicated the presence of several volatile organic compounds (VOCs) in soil gas in the vicinity of the unnamed tributary, specifically total petroleum hydrocarbons (TPH); 1,4-dichlorobenzene (1,4-DCB); and tetrachloroethene (PCE). A second Gore<sup>TM</sup> Module

Survey was conducted in November 2010, and the results were presented within ARCADIS' 4th Quarter 2010 Progress Report dated January 31, 2011. Updated figures from the Gore<sup>TM</sup> Module survey are provided in **Attachment 1**.

Based on the results from these Gore<sup>TM</sup> Module surveys, two potential PCE migration pathways were identified within the local drainage basin (Attachment 1). The eastern pathway originates behind Johnston properties and/or from the former Ashland facility, and migrates in a southeast direction toward the unnamed tributary. This also is considered to be the primary direction of groundwater flow from Ashland's facility. The second pathway appears to originate from multiple potential sources west of Ashland's facility, and includes the former Chemsolv facility and the NCDOT Site 61 facility. These groundwater impacts likely converge near the intersection of Immanuel Street and Holden Avenue, and then trend in an eastsoutheastern direction toward the unnamed tributary. This migration pattern is likely due to a sub basin within the larger drainage basin of the unnamed tributary. According to information provided by Mark Wilkins, NCDENR, on December 17, 2010, Dow Corning has two known sources of groundwater contamination. The first source is a regulated waste UST at their Building 1, on the east side of their facility, which was closed about 10 years ago. The primary constituents of concern (COCs) include 1,1,1-trichloroethane (1,1,1-TCA); 1,1-dichloroethane (1,1-DCA); and 1,1dichloroethene (1,1-DCE). A known second source is on the west side of their facility that contains PCE; trichloroethene (TCE); 1,1-DCE, and vinyl chloride.

The degree that Ashland's impacts might have commingling with these other potential off-site sources to the west is not known with certainty. To date, Ashland has been very proactive, not only investigating the potential contributions from their former facility, but other contributors on the western PCE plume. These investigations have identified that Chemsolv, Dow Corning, and NCDOT #61 are major sources of impacts to groundwater in the western PCE plume. Additional information will be submitted to NCDENR in the near future detailing the findings of environmental investigations conducted on the former Chemsolv property.

#### Soil Gas Sampling South of Immanuel Road

In response to the constituents detected in the Gore<sup>TM</sup> Modules, ARCADIS collected four conventional soil gas samples near the unnamed stream to assess whether the VOC constituents in soil gas exceeded applicable residential and/or industrial/commercial vapor intrusion screening criteria. The locations of the four points are depicted in **Figure 2**, and are representative of residential and/or

industrial/commercial properties south of Immanuel Road. All four soil-gas sample locations were located either on properties owned by the City of Greensboro or within the City of Greensboro controlled utility right-of-ways.

#### **Methods and Materials**

On November 8, 2010, ARCADIS installed four temporary soil gas sampling points at locations P1, P2, P4, and P5 (Figure 2). In order to install the sampling points, a freshly decontaminated 4-inch diameter stainless steel hand auger was used to advance each borehole to a target depth ranging from 4 to 6 ft below ground surface (bgs). This target interval was specified because the sample locations were near the unnamed tributary; and therefore, the depth to groundwater was expected to be shallow. When installing the points, a total depth of 4 ft bgs was selected at each point due the presence of the water table at deeper intervals. The sample points were constructed of ¼-inch inner-diameter Teflon® tubing attached to a 6-inch-long stainless steel screened casing, which were lowered to the bottom of each bore hole. A brass Swagelok® fitting and a gas-tight brass needle valve were attached above ground at the terminal end of the Teflon® tubing. The borehole surrounding the screen was then filled with a sand pack that was extended 4 inches above the screen. The remaining borehole annulus was filled with granular bentonite, which was then hydrated to create an air-tight seal. The sampling points were allowed to equilibrate for 24 hours before sampling.

On November 9, 2010, soil gas samples were collected at each of the four sample points. Prior to sampling, approximately three times the volume of air in the sand pack and tubing was purged using a pump set at a rate of 200 milliliters per minute (ml/min). A helium leak test also was performed on each soil gas well to ensure that ambient air from the surface was not being drawn into the wells during purging activities. The helium test consisted of placing a shroud above the temporary soil gas well and filling the enclosed space with approximately 30% helium gas. The well points were then purged of three well volumes. A sample of the soil gas was then collected and analyzed in the field using a hand-held helium meter. Field readings of the soil gas test samples detected less than 1 part-per-million (ppm) helium, indicating that ambient air had not entered the soil gas well while purging. Ambient meteorological data was also noted during sampling activities to evaluate conditions that might affect the sample results.

The soil gas samples were collected for VOC analyses using 1-liter Summa canisters equipped with flow-control regulators set for 60-minute sample duration. Samples

were also collected for TPH-diesel range organics (DRO) by passing 300 ml of soil gas through an adsorbent tube using a calibrated syringe. One duplicate soil gas sample was collected from sample location P2. After collection of each sample, the Summa canisters and sorbent tubes were closed, sealed with a brass cap(s), and shipped under chain-of-custody control to Air Toxics Ltd. in Folsom, California. The summa canisters were analyzed by Modified U.S. Environmental Protection Agency (USEPA) Method TO-15 for total VOCs (full-scan) and TPH-gasoline range organics (GRO). The sorbent tubes were analyzed by USEPA Method TO-17 for TPH-DRO. At completion of the soil gas sampling, ARCADIS abandoned the sampling points by extracting the screen and tubing from the ground surface and filling the borehole with bentonite chips.

#### Results

Analytical results for the four soil vapor samples are presented in **Table 1**. Laboratory analytical reports are included in **Attachment 2**. The values were compared to North Carolina Inactive Hazardous Sites Branch (IHSB) Industrial/Commercial soil gas screening levels and IHSB Residential soil gas screening levels (NCDENR 2011). These IHSB screening levels represent conservative estimates of constituent concentrations that correspond to acceptable human health risk levels. Soil gas concentrations below these levels indicate that the risk to human health is acceptable due to exposures from vapor intrusion within residential houses and/or industrial/commercial facilities. Soil gas concentrations above these screening values do not necessarily indicate the presence of health concerns, but instead, indicate the need for further evaluation.

Because the Gore<sup>TM</sup> module data demarcated two separate (i.e., eastern and western) migration pathways (**Attachment 1**), the following summarizes the soil gas sample results in relation to each point's spatial position.

Data Evaluation along the Eastern Migration Pathway

Soil gas sampling point P4 was located near the former surface water sample location SW-3. This location is within the suspected eastern migration pathway, and potentially originates from sources behind Johnston Properties, Ashland's former facility, and the  $\text{Ecoflo}^{\$}$  facility. 1,2,4-Trichlorobenzene (not considered an Ashland COC) was detected in soil gas sampling point P4 at a concentration of 4.7 micrograms per cubic meter [ $\mu$ g/m³]), as compared to its IHSB Residential Screening Level of 4.2  $\mu$ g/m³. This value was "J" qualified as estimate because it

was detected below the compound's reporting limit of  $35 \,\mu g/m^3$ . Therefore, this estimated value is neither significant, nor reliable when compared to the relatively similar IHSB Residential Screening Level of  $4.2 \,\mu g/m^3$ . No other VOCs were detected above their respective IHSB screening levels. Also, neither TPH-GRO nor TPH-DRO was detected in this sample. Based on the preliminary data for the eastern migration pathway, the VOC concentrations within the soil gas samples are not suspected to be a human health concern for vapor intrusion within buildings associated with either residential properties or industrial/commercial facilities. Additional investigations are planned that should determine with better certainty the degree that  $Ecoflo^{®}$  could be contributing to the off-site impacts.

Data Evaluation along the Western Migration Pathway

Soil gas sampling points P2 and P5 were located in the western leg of the area thought to potentially contain impacts from other facilities (i.e., other potential off-site sources). Soil gas sampling points P2 and P5 were in the general vicinity of surface water sample location SW-5, south and north of the unnamed tributary, respectively. Soil gas sample location P5 is the more northern (i.e., hydraulically upgradient) location, and only contained relatively low levels of VOCs. 1,2,4-Trimethylbenzene (TMB at 17  $\mu$ g/m³), a constituent commonly detected in gasoline, was the only VOC detected in sample P5 above its respective IHSB Residential Screening Level (14.6  $\mu$ g/m³). This value also was "J" qualified as estimated, and therefore, is not a reliable comparison to the IHSB Residential Screening Level because they are of similar values.

Sample P5 did not contain TPH-DROs above the laboratory reporting limit of <3,300  $\mu g/m^3$ . However, TPH-GROs were detected at a concentration of 1,000  $\mu g/m^3$ , which is significant because the detection of 1,2,4-TMB, a known gasoline constituent, was also present in this sample. There are no IHSB screening levels for TPH-GRO or TPH-DRO. No other VOCs were detected in sample P5 above their respective IHSB screening levels. TMBs are significantly less degradable (i.e., more recalcitrant) than the other gasoline compounds; therefore, TMBs are frequently used as indicator compounds for gasoline releases. It should be noted that the wells associated within the former Ashland facility historically have not contained any TMBs. However, the BP / M.M. Fowler Inc. gasoline station located at 2814 Patterson Street is a potential contributor to these petroleum impacts to groundwater.

Soil gas sampling point P2 is also located in the western leg of the area thought to potentially contain impacts from other facilities (i.e., other potential off-site sources).

Soil gas sampling points P2 is hydraulically downgradient, and on the opposite side of the unnamed tributary, as compared to sample location P5. However, sample P2 contained the highest VOC concentrations as compared to the three other samples within this set. This is an important finding because it affects our understanding of the conceptual site model (CSM) being developed for the site. The following VOC constituents were detected in sample P2 at concentrations that exceeded their respective ISHB Soil Gas Screening Levels:

- 1,1-DCE at a concentration of 2,600 µg/m³, which exceeded both the IHSB Residential Screening Level of 420 µg/m³ and the IHSB Industrial/Commercial Screening Level of 1,760 µg/m³.
- 1,1-DCA at a concentration of 420 µg/m³, which exceeded the IHSB Residential Screening Level of 150 µg/m³. The IHSB Industrial/Commercial Screening Level for 1,1-DCA of 770 µg/m³ was not exceeded.
- Chloroform at a concentration of 14 μg/m³, which exceeded the IHSB Residential Screening Level of 11 μg/m³. The IHSB Industrial/Commercial Screening Level for chloroform of 53 μg/m³ was not exceeded.
- TCE at a concentration of 140 µg/m³, which exceeded the IHSB Residential Screening Level of 120 µg/m³. The IHSB Industrial/Commercial Screening Level of 610 µg/m³ for TCE was not exceeded.
- PCE at a concentration of 1,500 μg/m³, which exceeded both the IHSB Residential Screening Level of 41 μg/m³ and the IHSB Industrial/Commercial Screening Level of 210 μg/m³.

Neither TPH-GROs nor TPH-DROs were detected in soil gas sample P2 above the laboratory reporting limits.

Data Evaluation between the Eastern and Western Migration Pathways

Soil gas sampling point P1 was located near surface water sample location SW-4, where PCE impacts were expected to be low based on the Gore<sup>TM</sup> Module survey. This location was selected because it was between the eastern and western migration pathways. The analytical results for sample location P1 was very similar to the results noted for sample location P4, because it only contained 1,2,4-Trichlorobenzene at a concentration of 7.0 µg/m³, as compared to its IHSB

Residential Screening Level of 4.2  $\mu$ g/m³. This value was "J" qualified as estimated because it was detected below the compound's reporting limit of 38  $\mu$ g/m³. No other VOCs were detected above their respective IHSB screening levels in this sample. TPH-DROs also were not detected in the sample.

TPH-GRO was detected in sample P1. This finding is significant because an apparent TPH-GRO concentration gradient exists from location P-5 (1,000  $\mu$ g/m³) along in the western migration pathway, as compared to the apparent TPH-GRO concentration of 280  $\mu$ g/m³ in sample P1. Therefore, potential gasoline releases likely have occurred within and/or near to the western migration pathway, and are not the result of Ashland's past operations at their facility.

There are no IHSB screening levels for TPH-GRO or TPH-DRO. However, human health effects from inhalation of vapors associated with the noted TPH-GROs detections can be evaluated by assessing the effects of their respective volatile indicator compounds (e.g., benzene, toluene, ethylbenzene, and xylenes [BTEX]), which were analyzed within the USEPA Method TO-15 list. All TPH-GRO indicator compounds were below their respective IHSB screening levels at sample location P1.

Based on these preliminary data, the VOC concentrations within soil gas sample P1, located between the two migration pathways, are not suspected to be a human health concern for vapor intrusion within buildings associated with either residential properties or industrial/commercial facilities.

#### Human Health Risk Evaluation due to the Vapor Intrusion Pathway

ARCADIS used the data contained herein to evaluate the potential for risks to human health based on the maximum concentrations of constituents that exceeded the IHSB Residential Soil Gas Screening Levels. These maximum concentrations were mostly associated with sample location P2, which is located within the western migration pathway, and potentially the result of contributions from other off-site sources (e.g., Dow Corning, Chemsolv). Regardless of this fact, the potential risks for a hypothetical residential receptor from inhalation of vapors in indoor air were calculated using the screening level soil gas USEPA spreadsheets within the Johnson and Ettinger model (USEPA 2004a) following the User's Guide (USEPA 2004b). The receptor was assumed to be a home-bound resident living in a residence located directly over the area where maximum soil gas concentrations

were measured. The model inputs and results are discussed below in more detail. Model worksheets are included in **Attachment 3**.

The currently available toxicity values and recommended chemical/physical parameters were used in the model runs (USEPA 2010). The spreadsheet layout of the model was also modified to accommodate several constituents simultaneously. Input parameters related to the structure were set at the default values for a residential structure (e.g., building size, building pressure differential, floor thickness, floor crack and seam sizes etc). Site specific model input parameters are as follows:

- Depth below grade to bottom for enclosed space was set at 15 centimeters (cm), which is typical for a slab-on-grade construction.
- Depth below grade to soil gas sample was set at the sampling depth of 4 ft.
- Soil type used in the model was loam (L) and default geotechnical parameter built into the model for that soil type was used. The soil type was set as loam as recommended in Table 11 of the User's Guide (USEPA 2004b) since the soil type observed during sampling was fine silty sand to sandy silt.
- The soil temperature was set at 17 degrees centigrade (62 degrees Fahrenheit), as indicated in the User's Guide (USEPA 2004b).

Potential risks to human health were evaluated quantitatively by combining calculated exposure levels and toxicity data. A distinction was made between non-carcinogenic and carcinogenic endpoints. Non-cancer hazards were estimated by calculating hazard quotients (HQ). For carcinogens, the excess lifetime cancer risk (ELCR) was estimated based on the potential increase in risk of cancer that results from lifetime exposures to the constituents at a site. The NCDENR IHSB uses benchmarks of HQs less than or equal to 1 and ELCRs within and below the range of  $10^{-6}$  to  $10^{-4}$  as acceptable hazards/risks, with a preference for ELCRs to be less than or equal to  $1 \times 10^{-6}$ .

The model result indicated that the risks were lower than acceptable levels for a home-bound resident living in a residence located directly over the area where maximum soil gas concentrations were measured. The calculated total HQ was 0.008, which is well below the target level of 1; while the calculated ELCR was  $4 \times 10^{-7}$ , which is below the lower end of NCDENR's benchmark.

#### **Conclusions and Recommendations**

The results of the soil gas investigation near the unnamed tributary indicated that soil vapors in this area were not detected at concentrations that would result in unacceptable risks or hazards to potential residential receptors. It also can be inferred that these risks are acceptable to the industrial properties located along Immanuel Street, because the criteria associated with industrial exposures are typically less conservative than residential exposure scenarios.

Ashland received a letter from NCDENR dated December 14, 2010 requesting among other things that Ashland investigate whether indoor air standards are being exceeded in non-residential buildings south of Patterson Street and north of Immanuel Road, and in residential buildings south of Immanuel Road and north of Swan Street. ARCADIS is currently planning additional investigations to evaluate sources north of Patterson Street and to more fully delineate the extent of potential impacts between Patterson Street and Swan Street, which may be associated with impacts detected at the former Ashland site. As part of these investigations, the existing CSM will be refined to further evaluate groundwater flow, contaminant transport, and attenuation mechanisms. Concurrently, additional assessments will also be performed to evaluate the potential for impacts to indoor air quality south of Patterson Street. Details of the pending investigations will be described in a brief work plan, which likely will be delivered to NCDENR in March 2011 for their review and comment.

In the mean time, ARCADIS and Ashland respectfully requests NCDENR to continue with efforts to identify other potentially responsible parties contributing to the chemical impacts in this drainage basin. Your efforts should be focused on other potential sources of TPH-GRO, TMBs, and other petroleum-related releases, because these compounds are not associated with releases from Ashland's former facility. In addition, any further information that the agency may find on the off-site sources of chlorinated compounds, which are contributing to impacts in the western plume, would also be appreciated.

We look forward to your review and response to this investigation report. Please let us know if you have any questions or comments.

Sincerely,

ARCADIS G&M of North Carolina, Inc.

Methew Webb, L.G.

Geologist

Donald Malone, P.E.

Principal Engineer/Certified Project Man

Attachments:

Table 1. Soil Vapor Analytical Results, November 2010

Figure 1. Site Location

Figure 2. Vapor Well Locations with Detections above IHSB Screening Values

Attachment 1. Updated Figures from Gore<sup>TM</sup> Module Survey Attachment 2. Soil Vapor Laboratory Analytical Data Report

Attachment 3. Johnson and Ettinger Vapor Intrusion Model Spreadsheets

Copies:

Mike Dever, Ashland Inc., Dublin, Ohio

#### References

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Mr. Mark Wilkins February 28, 2011

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**TABLES** 

Table 1. Soil Vapor Analytical Results, November 2010, South Buffalo Creek - Belmar St., Greensboro, North Carolina.

Sample Location: Lab Sample ID: Location Description: Date Sampled:	IHSB Ind/Comm. Soil Gas Screening Level <sup>a</sup>	IHSB Residential Soil Gas Screening Level <sup>b</sup>	P-1 1011264-01A Belmar St North 11/9/2010	P-2 1011264-02A Belmar St South 11/9/2010	P-2 (dup) 1011264-03A Belmar St South 11/9/2010	P-4 1011264-04A Immanuel St. 11/9/2010	P-5 1011264-05A Swan St. 11/9/2010
VOCs (USEPA Method TO-15) ug/m³						- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	
Freon 12	1.760	420	2.3 J	2.3 J	2.7 J	211	101
Chloromethane	780	188	7.5 J	<17	<17	2.1 J	1.9 J
Bromomethane	NE	NE NE	<5.0	<8.2	<8.0	<9.9	4.0 J
Freon 11	6,200	1,460	<7.2	<12	<12	<4.6 1.6 J	2.1 J
1,1-Dichloroethene	1,760	420	<5.0	2,600	2,700	<4.7	<5.8 UJ
Ethanol	NE	NE NE	14	<16	<15		<4.1 UJ
Acetone	280,000	64,000	24	37	27	14 32	<7.8 UJ
2-Propanol	NE	NE	5.2 J	<21	<20		130 J
Carbon Disulfide	6,200	1,460	4.0 UB	6.5 UB	<6.4	<12	68 J
Methylene Chloride	2,600	520	<4.4	<7.3	<7.1	3.7 UB <4.2	8.2 J
Hexane	6,200	1,460	<4.5	<7.4	<7.1	<4.2	6.3 J
1,1-Dichloroethane	770	150	<5.2	420	440		4.2 J
2-Butanone (Methyl Ethyl Ketone)	44,000	10,400	3.4.J	4.1 J		<4.8	<4.2 UJ
Tetrahydrofuran	NE	NE	<3.8		4.1 J	3.4	20 J
Chloroform	53	11	<6.2	<6.2	<6.0	2.6 J	2.5 J
1,1,1-Trichloroethane	44,000	10,400	<7.0	240	250	<5.8	<5.1 UJ
Cyclohexane	NE NE	NE	<4.4			9.0	4.9 J
2,2,4,-Trimethylpentane	NE	NE	<6.0	<7.2	<7.0	<4.1	0.97 J
Benzene	160	31	1.4 J	<9.8	<9.6	<5.6	4.8 UB
1,2-Dichloroethane	47	9.4	<5.2	2.0 J <8.5	2.8 J	0.94 J	11 J
Trichloroethene	610	120	<6.8	140	<8.3 150	<4.8	0.78 J
1,4-Dioxane	NE NE	NE	16 J	<30		<6.4	7.0 J
4-Methyl-2-Pentanone	26,000	6,200	<5.2	<8.6	<30	3.2 J	<15 UJ
Toluene	44,000	10,400	4.8 UB		<8.4	<4.9	1.2 J
1,1,2-Trichloroethane	77	15	<7.0	7.9 UB	7.7 UB	4.5 UB	18 J
Tetrachloroethene	210	41	2.9 J	3.2 J 1,500	3.0 J	<6.5	<5.7 UJ
Chlorobenzene	440	104	5.9 UB	9.7 UB	<b>1,700</b> 9.4 UB	5.1 J	21 J
Ethyl Benzene	490	97	<5.5	9.7 UB <9.1	<8.9	5.5 UB	4.8 UB
m,p-Xylene	6,200 <sup>d</sup>	1,460 <sup>d</sup>	5.5 UB	9.1 UB	8.9 UB	<5.2	4.5 UB
o-Xylene	6,200	1,460	<5.5	<9.1 UB		5.2 UB	4.5 UB
Styrene	8,800	2,000	<5.4	<8.9	<8.9	1.0 J	1.8 J
Cumene	3,600	840	17		<8.7	15	4.4 UB
Propylbenzene	NE NE	NE NE	6.3 UB	<10 <10	<10	5.9 J	100 J
4-Ethyltoluene	NE	NE	2.6.1		<10	5.9 UB	5.1 UB
1,3,5-Trimethylbenzene	NE NE	NE	6.3 UB	<10	<10	1.7 J	15 J
1,2,4-Trimethylbenzene	62	14.6	6.3 UB	<10	<10	5.9 UB	7.7 J
1,3-Dichlorobenzene	NE NE	NE		<10	<10	5.9 UB	17 J
1,4-Dichlorobenzene	110	22	7.7 UB 7.7 UB	<13 13 UB	<12	7.2 UB	<6.2 UJ
alpha-Chlorotoluene	NE NE	NE NE	<6.6		<12	7.2 UB	6.2 UB
1,2-Dichlorobenzene	1,760	420	7.7 UB	<11 12 LID	<11	<6.2	5.4 UB
1,2,4-Trichlorobenzene	17.6	4.2	7.7 UB	13 UB <62	12 UB <61 [	7.2 UB 4.7 J	6.2 UB 3.5 J
TPH, Gasoline Range Organics	NE	NE	280	<430	<420	<240	1000 J
DROs (USEPA Method TO-17) µg/m <sup>3</sup> TPH, Diesel Range Organics	NE	NE	<3,300	<3,300	<3,300	<3,300	<3,300 UJ

b

- North Carolina Inactive Hazardous Sites Branch (IHSB) Industrial/Commercial Vapor Intrusion Screening Table -Acceptable Indoor Air Concentration.
- North Carolina IHSB Residential Vapor Intrusion Screening Table -

- Acceptable Soil Gas Concentration.

  Value for total combined cis and trans isomers.

  Screening value is for the individual m- and p- isomers.
- μg/m³ ND Micrograms per cubic meter.
- Not detected.
- NE Indoor Air quality criteria not established.
- J/UJ
- Compound concentration is qualified as estimated (detected/undetected).

  Compound concentration is qualified as nondetect due to associated blank contamination.

Value exceeds the IHSB Residential Indoor Soil Gas Screening Level.

Value exceeds both the IHSB Residential and Industrial/Commercial Indoor Soil Gas Screening Levels.

**Figures** 

CITY: Augusta, GA DIV/GROUP: ENV 'DB: A. Saul LD: "PIC: PM.D. Malene TM: M. Webb TR: Thursday, February 24, 2011 3:51:27 PM GA:ENVCADAugusta-GAAACT/OH004000\_Ashind/NC04113011-GH030000001.mxd

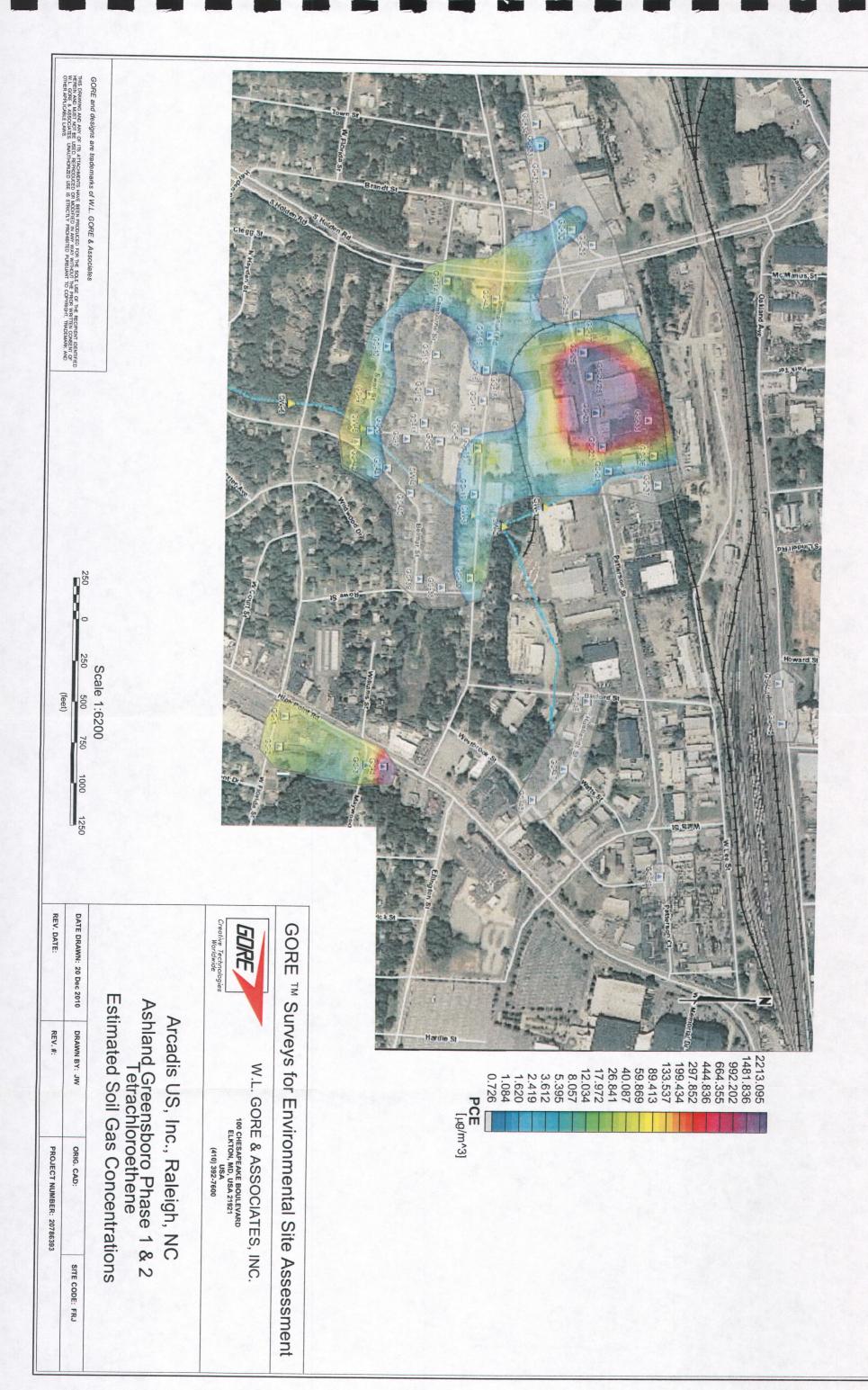
Immanuel Rd

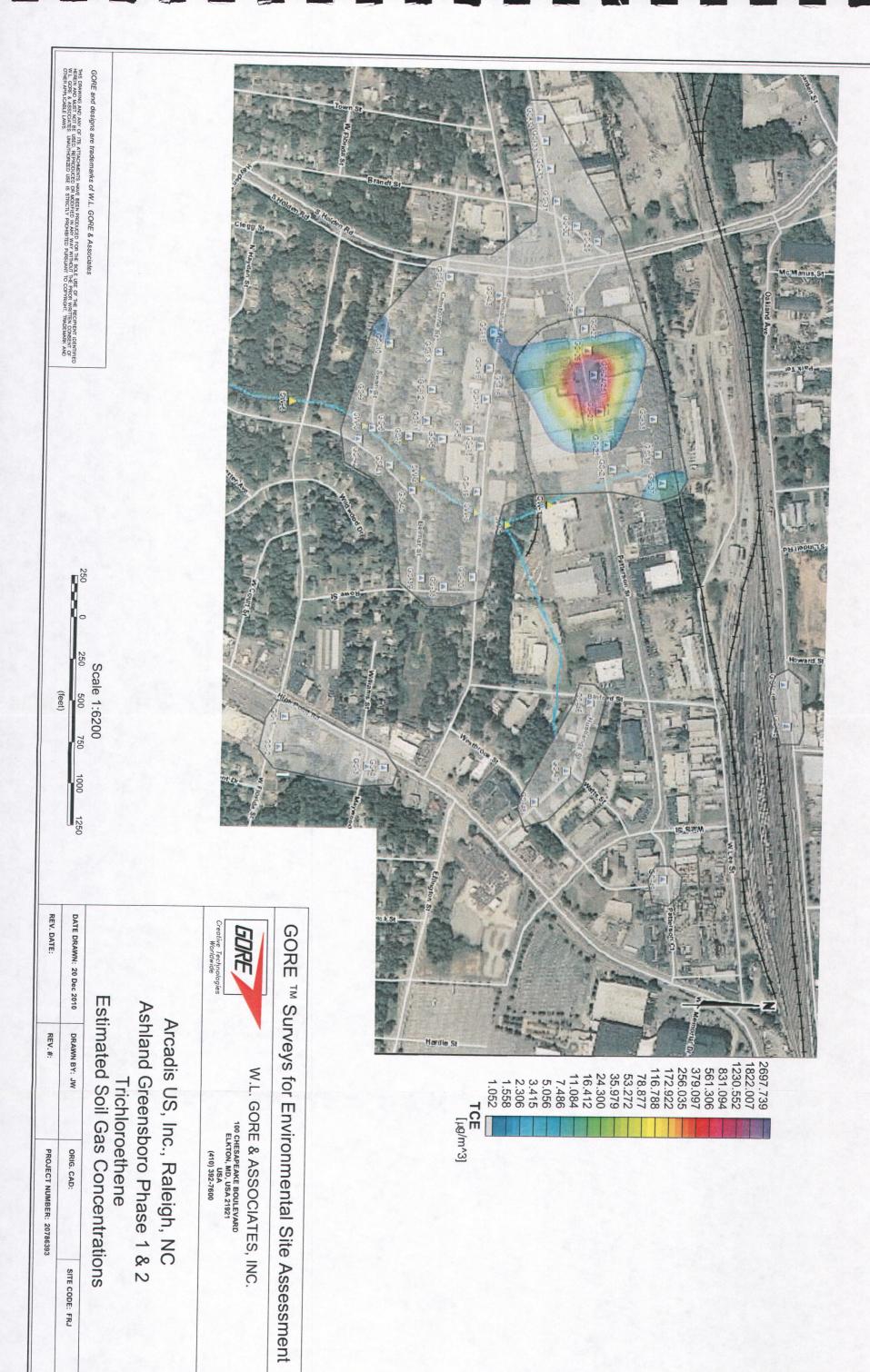
Belmar-S P1  $(\mu g/m^3)$ 1,2,4-TCB 7.0 J FORMER ASHLAND FACILITY 2802 PATTERSON STREET GREENSBORO, NORTH CAROLINA SOIL GAS INVESTIGATION **Vapor Well Locations with Detections Above IHSB Screening Values** FIGURE **ARCADIS** 

P4 (μg/m<sup>3</sup>) 1,2,4-TCB

4.7 J

Attachment 1
Updated Figures from
Gore<sup>™</sup> Module Survey

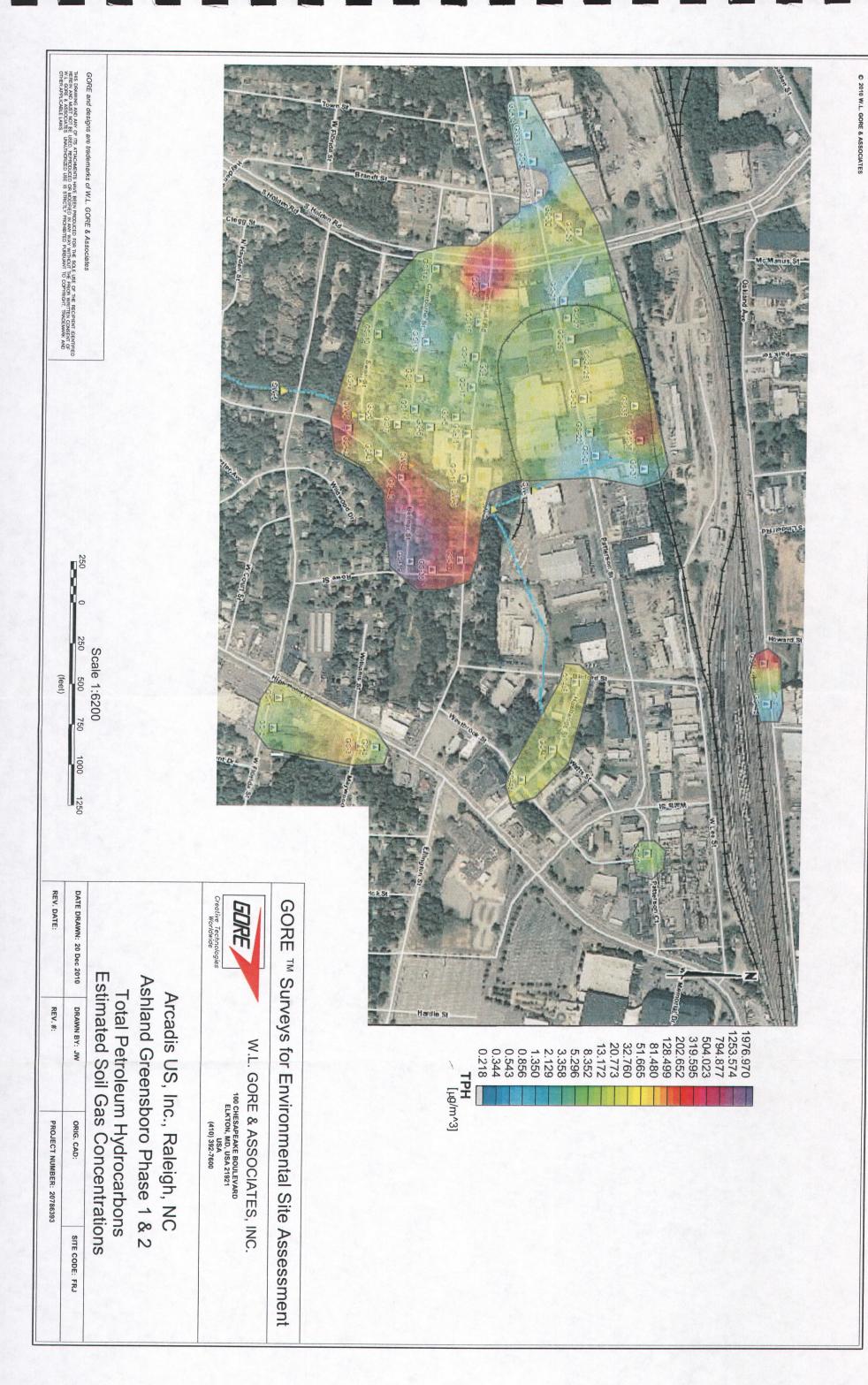


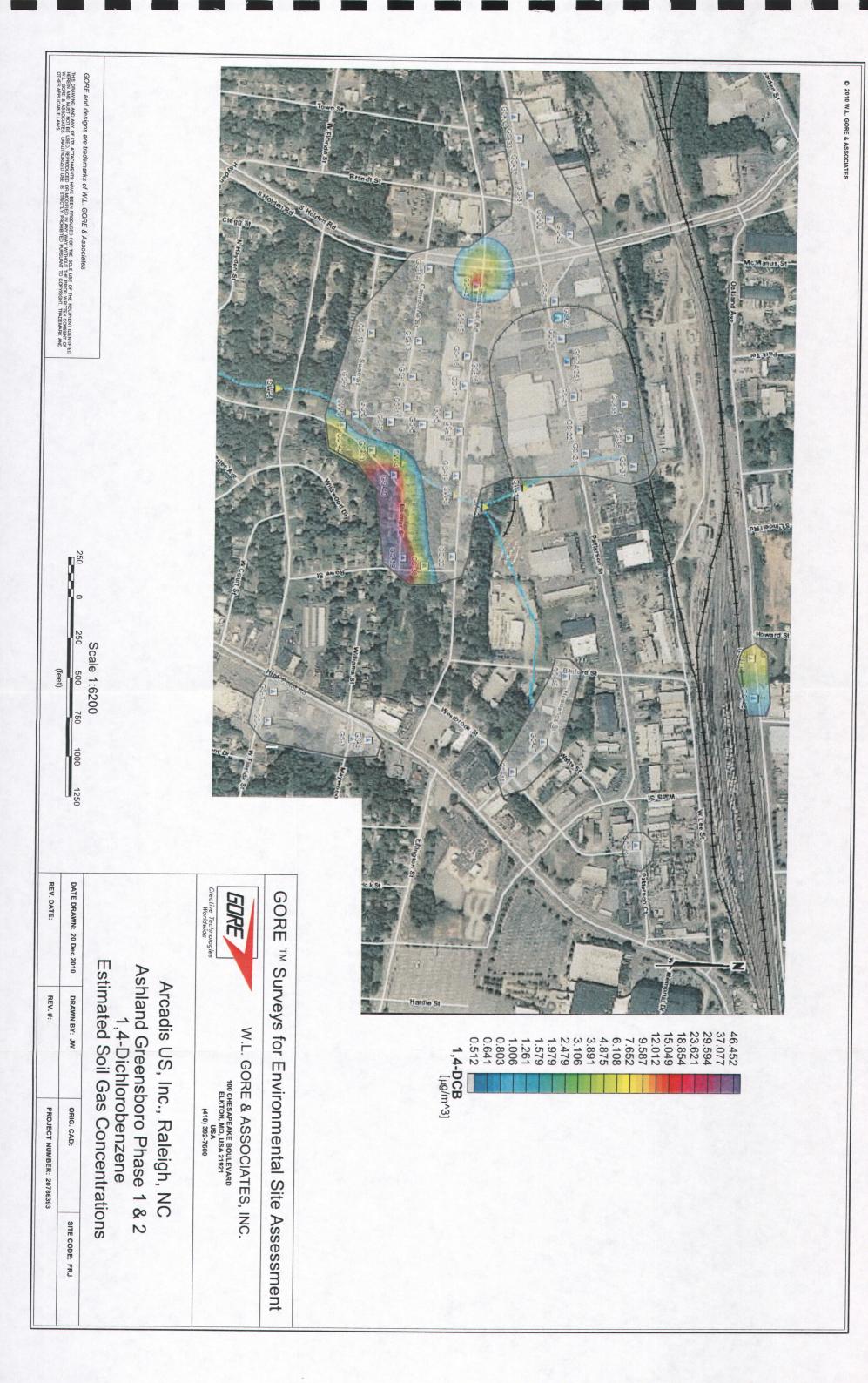


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Attachment 2

Soil Vapor Laboratory Analytical Data Report



Client Sample ID: P2 Lab ID#: 1011264-02A

#### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3111612	Date of Collection: 11/9/10 3:50:00 PM
Dil. Factor:	4.20	Date of Analysis: 11/16/10 02:15 PM

	*****	Date	Dute of Allaryois. 11710/10 02:1011.			
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)		
2-Hexanone	8.4	Not Detected	34	Not Detected		
Dibromochloromethane	2.1	Not Detected	18	Not Detected		
1,2-Dibromoethane (EDB)	2.1	Not Detected	16	Not Detected		
Chlorobenzene	2.1	0.69 J	9.7	3.2 J		
Ethyl Benzene	2.1	Not Detected	9.1	Not Detected		
m,p-Xylene	2.1	0.30 J	9.1	1.3 J		
o-Xylene	2.1	Not Detected	9.1	Not Detected		
Styrene	2.1	Not Detected	8.9	Not Detected		
Bromoform	2.1	Not Detected	22	Not Detected		
Cumene	2.1	Not Detected	10	Not Detected		
1,1,2,2-Tetrachloroethane	2.1	Not Detected	14	Not Detected		
Propylbenzene	2.1	Not Detected	10	Not Detected		
4-Ethyltoluene	2.1	Not Detected	10	Not Detected		
1,3,5-Trimethylbenzene	2.1	Not Detected	10	Not Detected		
1,2,4-Trimethylbenzene	2.1	Not Detected	10	Not Detected		
1,3-Dichlorobenzene	2.1	Not Detected	13	Not Detected		
1,4-Dichlorobenzene	2.1	0.32 J	13	1.9 J		
alpha-Chlorotoluene	2.1	Not Detected	11	Not Detected		
1,2-Dichlorobenzene	2.1	0.48 J	13	2.9 J		
1,2,4-Trichlorobenzene	8.4	Not Detected	62	Not Detected		
Hexachlorobutadiene	8.4	Not Detected	90	Not Detected		
TPH ref. to Gasoline (MW=100)	100	Not Detected	430	Not Detected		

J = Estimated value.

Container Type: 1 Liter Summa Canister

		Metnoa
Surrogates	%Recovery	Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	98	70-130



#### Client Sample ID: P2 (dup) Lab ID#: 1011264-03A

#### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3111613	Date of Collection: 11/9/10 3:50:00 PM
Dil. Factor:	4.10	Date of Analysis: 11/16/10 02:36 PM

Dil. Factor:	4.10	Date of Analysis: 11/16/10 02:36 PM				
	Rpt. Limit	Amount	Rpt. Limit	Amount		
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)		
Freon 12	2.0	0.55 J	10	2.7 J		
Freon 114	2.0	Not Detected	14	Not Detected		
Chloromethane	8.2	Not Detected	17	Not Detected		
Vinyl Chloride	2.0	Not Detected	5.2	Not Detected		
1,3-Butadiene	2.0	Not Detected	4.5	Not Detected		
Bromomethane	2.0	Not Detected	8.0	Not Detected		
Chloroethane	2.0	Not Detected	5.4	Not Detected		
Freon 11	2.0	Not Detected	12	Not Detected		
Ethanol	8.2	Not Detected	15	Not Detected		
Freon 113	2.0	Not Detected	16	Not Detected		
1,1-Dichloroethene	2.0	690	8.1	2700		
Acetone	8.2	11 -	19	27		
2-Propanol	8.2	Not Detected	20	Not Detected		
Carbon Disulfide	2.0	Not Detected	6.4	Not Detected		
3-Chloropropene	8.2	Not Detected	26	Not Detected		
Methylene Chloride	2.0	Not Detected	7.1	Not Detected		
Methyl tert-butyl ether	2.0	Not Detected	7.4	Not Detected		
trans-1,2-Dichloroethene	2.0	Not Detected	8.1	Not Detected		
Hexane	2.0	Not Detected	7.2	Not Detected		
1,1-Dichloroethane	2.0	110	8.3	440		
2-Butanone (Methyl Ethyl Ketone)	2.0	1.4 J	6.0	4.1 J		
cis-1,2-Dichloroethene	2.0	Not Detected	8.1	Not Detected		
Tetrahydrofuran	2.0	Not Detected	6.0	Not Detected		
Chloroform	2.0	2.9	10	14		
1,1,1-Trichloroethane	2.0	46	11	250		
Cyclohexane	2.0	Not Detected	7.0	Not Detected		
Carbon Tetrachloride	2.0	Not Detected	13	Not Detected		
2,2,4-Trimethylpentane	2.0	Not Detected	9.6	Not Detected		
Benzene	2.0	0.88 J	6.5	2.8 J		
1,2-Dichloroethane	2.0	Not Detected	8.3	Not Detected		
Heptane	2.0	Not Detected	8.4	Not Detected		
Trichloroethene	2.0	28	11	150		
1,2-Dichloropropane	2.0	Not Detected	9.5	Not Detected		
1,4-Dioxane	8.2	Not Detected	30	Not Detected		
Bromodichloromethane	2.0	Not Detected	14	Not Detected		
cis-1,3-Dichloropropene	2.0	Not Detected	9.3	Not Detected		
4-Methyl-2-pentanone	2.0	Not Detected	8.4	Not Detected		
Toluene	2.0	0.86 J	7.7	3.2 J		
trans-1,3-Dichloropropene	2.0	Not Detected	9.3	Not Detected		
1,1,2-Trichloroethane	2.0	0.55 J	11	3.0 J		
Tetrachloroethene	2.0	250	14	1700		



#### Client Sample ID: P2 (dup) Lab ID#: 1011264-03A

#### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3111613	Date of Collection: 11/9/10 3:50:00 PM
Dil. Factor:	4.10	Date of Analysis: 11/16/10 02:36 PM

	7.10	Dute	Ot Allalysis. This	0710 02:001 111
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Hexanone	8.2	Not Detected	34	Not Detected
Dibromochloromethane	2.0	Not Detected	17	Not Detected
1,2-Dibromoethane (EDB)	2.0	Not Detected	16	Not Detected
Chlorobenzene	2.0	0.56 J	9.4	2.6 J
Ethyl Benzene	2.0	Not Detected	8.9	Not Detected
m,p-Xylene	2.0	0.39 J	8.9	1.7 J
o-Xylene	2.0	Not Detected	8.9	Not Detected
Styrene	2.0	Not Detected	8.7	Not Detected
Bromoform	2.0	Not Detected	21	Not Detected
Cumene	2.0	Not Detected	10	Not Detected
1,1,2,2-Tetrachloroethane	2.0	Not Detected	14	Not Detected
Propylbenzene	2.0	Not Detected	10	Not Detected
4-Ethyltoluene	2.0	Not Detected	10	Not Detected
1,3,5-Trimethylbenzene	2.0	Not Detected	10	Not Detected
1,2,4-Trimethylbenzene	2.0	Not Detected	10	Not Detected
1,3-Dichlorobenzene	2.0	Not Detected	12	Not Detected
1,4-Dichlorobenzene	2.0	Not Detected	12	Not Detected
alpha-Chlorotoluene	2.0	Not Detected	11	Not Detected
1,2-Dichlorobenzene	2.0	0.38 J	12	2.2 J
1,2,4-Trichlorobenzene	8.2	Not Detected	61	Not Detected
Hexachlorobutadiene	8.2	Not Detected	87	Not Detected
TPH ref. to Gasoline (MW=100)	100	Not Detected	420	Not Detected

J = Estimated value.

Container Type: 1 Liter Summa Canister

,,,		Method	
Surrogates	%Recovery	Limits	
Toluene-d8	101	70-130	
1,2-Dichloroethane-d4	105	70-130	
4-Bromofluorobenzene	98	70-130	



#### Client Sample ID: P4 Lab ID#: 1011264-04A

### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3111609	Date of Collection: 11/9/10 4:42:00 PM
Dil. Factor:	2.39	Date of Analysis: 11/16/10 01:06 PM

Dil. Factor:	2.39	Date	of Analysis: 11/1	6/10 01:06 PM
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	1.2	0.42 J	5.9	2.1 J
Freon 114	1.2	Not Detected	8.4	Not Detected
Chloromethane	4.8	Not Detected	9.9	Not Detected
Vinyl Chloride	1.2	Not Detected	3.0	Not Detected
1,3-Butadiene	1.2	Not Detected	2.6	Not Detected
Bromomethane	1.2	Not Detected	4.6	Not Detected
Chloroethane	1.2	Not Detected	3.2	Not Detected
Freon 11	1.2	0.28 J	6.7	1.6 J
Ethanol	4.8	7.2	9.0	14
Freon 113	1.2	Not Detected	9.2	Not Detected
1,1-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Acetone	4.8	13	11	32
2-Propanol	4.8	Not Detected	12	Not Detected
Carbon Disulfide	1.2	0.94 J	3.7	2.9 J
3-Chloropropene	4.8	Not Detected	15	Not Detected
Methylene Chloride	1.2	Not Detected	4.2	Not Detected
Methyl tert-butyl ether	1.2	Not Detected	4.3	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Hexane	1.2	Not Detected	4.2	Not Detected
1,1-Dichloroethane	1.2	Not Detected	4.8	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.2	1.2	3.5	3.4
cis-1,2-Dichloroethene	1.2	Not Detected	4.7	Not Detected
Tetrahydrofuran	1.2	0.87 J	3.5	2.6 J
Chloroform	1.2	Not Detected	5.8	Not Detected
1,1,1-Trichloroethane	1.2	1.6	6.5	9.0
Cyclohexane	1.2	Not Detected	4.1	Not Detected
Carbon Tetrachloride	1.2	Not Detected	7.5	Not Detected
2,2,4-Trimethylpentane	1.2	Not Detected	5.6	Not Detected
Benzene	1.2	0.29 J	3.8	0.94 J
1,2-Dichloroethane	1.2	Not Detected	4.8	Not Detected
Heptane	1.2	Not Detected	4.9	Not Detected
Trichloroethene	1.2	Not Detected	6.4	Not Detected
1,2-Dichloropropane	1.2	Not Detected	5.5	Not Detected
1,4-Dioxane	4.8	0.90 J	17	3.2 J
Bromodichloromethane	1.2	Not Detected	8.0	Not Detected
cis-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detected
4-Methyl-2-pentanone	1.2	Not Detected	4.9	Not Detected
Toluene	1.2	0.67 J	4.5	2.5 J
trans-1,3-Dichloropropene	1.2	Not Detected	5.4	Not Detected
1,1,2-Trichloroethane	1.2	Not Detected	6.5	Not Detected
Tetrachloroethene	1.2	0.76 J	8.1	5.1 J



#### Client Sample ID: P4 Lab ID#: 1011264-04A

#### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3111609	Date of Collection: 11/9/10 4:42:00 PM
Dil. Factor:	2.39	Date of Analysis: 11/16/10 01:06 PM

Dii. i dotor.	Z.J3	Date	Of Allalysis. 1171	0/10 01.00 1 IN
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Hexanone	4.8	Not Detected	20	Not Detected
Dibromochloromethane	1.2	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	1.2	Not Detected	9.2	Not Detected
Chlorobenzene	1.2	0.77 J	5.5	3.5 J
Ethyl Benzene	1.2	Not Detected	5.2	Not Detected
m,p-Xylene	1.2	0.59 J	5.2	2.5 J
o-Xylene	1.2	0.24 J	5.2	1.0 J
Styrene	1.2	3.5	5.1	15
Bromoform	1.2	Not Detected	12	Not Detected
Cumene	1.2	1.2	5.9	5.9
1,1,2,2-Tetrachloroethane	1.2	Not Detected	8.2	Not Detected
Propylbenzene	1.2	0.18 J	5.9	0.90 J
4-Ethyltoluene	1.2	0.35 J	5.9	1.7 J
1,3,5-Trimethylbenzene	1.2	0.18 J	5.9	0.87 J
1,2,4-Trimethylbenzene	1.2	0.43 J	5.9	2.1 J
1,3-Dichlorobenzene	1.2	0.24 J	7.2	1.4 J
1,4-Dichlorobenzene	1.2	0.39 J	7.2	2.4 J
alpha-Chlorotoluene	1.2	Not Detected	6.2	Not Detected
1,2-Dichlorobenzene	1.2	0.58 J	7.2	3.5 J
1,2,4-Trichlorobenzene	4.8	0.63 J	35	4.7 J
Hexachlorobutadiene	4.8	Not Detected	51	Not Detected
TPH ref. to Gasoline (MW=100)	60	Not Detected	240	Not Detected

J = Estimated value.

**Container Type: 1 Liter Summa Canister** 

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	101	70-130



### Client Sample ID: P5 Lab ID#: 1011264-05A

#### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3111610	Date of Collection: 11/9/10 5:45:00 PM
Dil. Factor:	2.08	Date of Analysis: 11/16/10 01:24 PM

Dil. Factor:	2.08 Date of Analysis: 11/16/10 01:24 PM			
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	1.0	0.38 J	5.1	1.9 J
Freon 114	1.0	Not Detected	7.3	Not Detected
Chloromethane	4.2	1.9 J	8.6	4.0 J
Vinyl Chloride	1.0	Not Detected	2.6	Not Detected
1,3-Butadiene	1.0	Not Detected	2.3	Not Detected
Bromomethane	1.0	0.53 J	4.0	2.1 J
Chloroethane	1.0	Not Detected	2.7	Not Detected
Freon 11	1.0	Not Detected	5.8	Not Detected
Ethanol	4.2	Not Detected	7.8	Not Detected
Freon 113	1.0	Not Detected	8.0	Not Detected
1,1-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Acetone	4.2	54	9.9	130
2-Propanol	4.2	28	10	68
Carbon Disulfide	1.0	2.6	3.2	8.2
3-Chloropropene	4.2	Not Detected	13	Not Detected
Methylene Chloride	1.0	1.8	3.6	6.3
Methyl tert-butyl ether	1.0	Not Detected	3.7	Not Detected
trans-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Hexane	1.0	1.2	3.7	4.2
1,1-Dichloroethane	1.0	Not Detected	4.2	Not Detected
2-Butanone (Methyl Ethyl Ketone)	1.0	6.8	3.1	20
cis-1,2-Dichloroethene	1.0	Not Detected	4.1	Not Detected
Tetrahydrofuran	1.0	0.86 J	3.1	2.5 J
Chloroform	1.0	Not Detected	5.1	Not Detected
1,1,1-Trichloroethane	1.0	0.91 J	5.7	4.9 J
Cyclohexane	1.0	0.28 J	3.6	0.97 J
Carbon Tetrachloride	1.0	Not Detected	6.5	Not Detected
2,2,4-Trimethylpentane	1.0	0.11 J	4.8	0.52 J
Benzene	1.0	3.5	3.3	11
1,2-Dichloroethane	1.0	0.19 J	4.2	0.78 J
Heptane	1.0	Not Detected	4.3	Not Detected
Trichloroethene	1.0	1.3	5.6	7.0
1,2-Dichloropropane	1.0	Not Detected	4.8	Not Detected
1,4-Dioxane	4.2	Not Detected	15	Not Detected
Bromodichloromethane	1.0	Not Detected	7.0	Not Detected
cis-1,3-Dichloropropene	1.0	Not Detected	4.7	Not Detected
4-Methyl-2-pentanone	1.0	0.30 J	4.3	1.2 J
Toluene	1.0	4.7	3.9	18
trans-1,3-Dichloropropene	1.0	Not Detected	4.7	Not Detected
1,1,2-Trichloroethane	1.0	Not Detected	5.7	Not Detected
Tetrachloroethene	1.0	3.1	7.0	21



Client Sample ID: P5 Lab ID#: 1011264-05A

#### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	3111610	Date of Collection: 11/9/10 5:45:00 PM
Dil. Factor:	2.08	Date of Analysis: 11/16/10 01:24 PM

	2.00	Date	Ol Allarysis. 11/1	0/10 01:2-71 111
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Hexanone	4.2	Not Detected	17	Not Detected
Dibromochloromethane	1.0	Not Detected	8.8	Not Detected
1,2-Dibromoethane (EDB)	1.0	Not Detected	8.0	Not Detected
Chlorobenzene	1.0	0.78 J	4.8	3.6 J
Ethyl Benzene	1.0	0.50 J	4.5	2.2 J
m,p-Xylene	1.0	0.99 J	4.5	4.3 J
o-Xylene	1.0	0.42 J	4.5	1.8 J
Styrene	1.0	0.35 J	4.4	1.5 J
Bromoform	1.0	Not Detected	11	Not Detected
Cumene	1.0	21	5.1	100
1,1,2,2-Tetrachloroethane	1.0	Not Detected	7.1	Not Detected
Propylbenzene	1.0	0.83 J	5.1	4.1 J
4-Ethyltoluene	1.0	3.2	5.1	15
1,3,5-Trimethylbenzene	1.0	1.6	5.1	7.7
1,2,4-Trimethylbenzene	1.0	3.5	5.1	17
1,3-Dichlorobenzene	1.0	Not Detected	6.2	Not Detected
1,4-Dichlorobenzene	1.0	0.31 J	6.2	1.9 J
alpha-Chlorotoluene	1.0	0.24 J	5.4	1.2 J
1,2-Dichlorobenzene	1.0	0.49 J	6.2	3.0 J
1,2,4-Trichlorobenzene	4.2	0.47 J	31	3.5 J
Hexachlorobutadiene	4.2	Not Detected	44	Not Detected
TPH ref. to Gasoline (MW=100)	52	250	210	1000

J = Estimated value.

Container Type: 1 Liter Summa Canister

•		Method	
Surrogates	%Recovery	Limits	
Toluene-d8	100	70-130	
1,2-Dichloroethane-d4	102	70-130	
4-Bromofluorobenzene	99	70-130	



#### Client Sample ID: Lab Blank Lab ID#: 1011264-06A

#### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 3111607a Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 11/16/10 11:38 AM

Dil. Factor.	1.00	Date	of Analysis: 11/1	6/10 11:38 AM
	Rpt. Limit	Amount	Rpt. Limit	Amount
Compound	(ppbv)	(ppbv)	(ug/m3)	(ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	2.0	Not Detected	4.1	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Chloroethane	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	2.0	Not Detected	4.8	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	0.50	0.14 J	1.6	0.42 J
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	0.50	Not Detected	1.7	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	0.055 J	2.3	0.26 J
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	0.099 J	1.9	0.37 J
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected



#### Client Sample ID: Lab Blank Lab ID#: 1011264-06A

### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:	3111607a 1.00	Date of Collection: NA Date of Analysis: 11/16/10 11:38 AM		
Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	0.087 J	3.8	0.67 J
Chlorobenzene	0.50	0.34 J	2.3	1.6 J
Ethyl Benzene	0.50	0.050 J	2.2	0.22 J
m,p-Xylene	0.50	0.13 J	2.2	0.57 J
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	0.090 J	2.1	0.38 J
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	0.066 J	2.4	0.32 J
1,1,2,2-Tetrachloroethane	0.50	0.081 J	3.4	0.55 J
Propylbenzene	0.50	0.094 J	2.4	0.46 J
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	0.12 J	2.4	0.58 J
1,2,4-Trimethylbenzene	0.50	0.15 J	2.4	0.72 J
1,3-Dichlorobenzene	0.50	0.23 J	3.0	1.4 J
1,4-Dichlorobenzene	0.50	0.31 J	3.0	1.8 J
alpha-Chlorotoluene	0.50	0.16 J	2.6	0.83 J
1,2-Dichlorobenzene	0.50	0.39 J	3.0	2.4 J
1,2,4-Trichlorobenzene	2.0	0.67 J	15	5.0 J
Hexachlorobutadiene	2.0	0.32 J	21	3.5 J
TPH ref. to Gasoline (MW=100)	25	Not Detected	100	Not Detected

J = Estimated value.

Container Type: NA - Not Applicable

Surrogates		Method	
	%Recovery	Limits	
Toluene-d8	100	70-130	
1,2-Dichloroethane-d4	102	70-130	
4-Bromofluorobenzene	99	70-130	



#### Client Sample ID: CCV Lab ID#: 1011264-07A

#### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 3111602 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 11/16/10 09:14 AM

Compound	%Recovery
Freon 12	102
Freon 114	100
Chloromethane	98
Vinyl Chloride	83
1,3-Butadiene	87
Bromomethane	99
Chloroethane	98
Freon 11	102
Ethanol	96
Freon 113	103
I,1-Dichloroethene	102
Acetone	100
2-Propanol	100
Carbon Disulfide	100
B-Chloropropene	101
Methylene Chloride	101
Methyl tert-butyl ether	101
rans-1,2-Dichloroethene	98
Hexane	. 97
,1-Dichloroethane	100
2-Butanone (Methyl Ethyl Ketone)	99
is-1,2-Dichloroethene	99
Fetrahydrofuran	99
Chloroform	100
,1,1-Trichloroethane	101
Cyclohexane	96
Carbon Tetrachloride	101
2,2,4-Trimethylpentane	94
Benzene	99
,2-Dichloroethane	107
leptane	101
richloroethene	99
,2-Dichloropropane	99
,4-Dioxane	101
Bromodichloromethane	103
sis-1,3-Dichloropropene	99
I-Methyl-2-pentanone	100
oluene	99
rans-1,3-Dichloropropene	101
,1,2-Trichloroethane	102
etrachloroethene	101



### Client Sample ID: CCV Lab ID#: 1011264-07A

### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: Dil. Factor:

3111602 1.00 Date of Collection: NA

Date of Analysis: 11/16/10 09:14 AM

Compound	%Recovery
2-Hexanone	107
Dibromochloromethane	103
1,2-Dibromoethane (EDB)	101
Chlorobenzene	100
Ethyl Benzene	99
m,p-Xylene	98
p-Xylene	98
Styrene	99
Bromoform	100
Cumene	98
1,1,2,2-Tetrachloroethane	98
Propylbenzene	99
4-Ethyltoluene	99
1,3,5-Trimethylbenzene	96
1,2,4-Trimethylbenzene	97
1,3-Dichlorobenzene	96
1,4-Dichlorobenzene	96
alpha-Chlorotoluene	98
,2-Dichlorobenzene	95
1,2,4-Trichlorobenzene	93
-lexachlorobutadiene	94
ΓPH ref. to Gasoline (MW=100)	100

### Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	99	70-130



### Client Sample ID: LCS Lab ID#: 1011264-08A

### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 3111604 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 11/16/10 10:25 AM

Compound	%Recovery
Freon 12	101
Freon 114	97
Chloromethane	99
Vinyl Chloride	77
1,3-Butadiene	82
Bromomethane	99
Chloroethane	98
Freon 11	99
Ethanol	86
Freon 113	89
1,1-Dichloroethene	90
Acetone	99
2-Propanol	97
Carbon Disulfide	99
3-Chloropropene	98
Methylene Chloride	92
Methyl tert-butyl ether	100
trans-1,2-Dichloroethene	98
Hexane	92
1,1-Dichloroethane	93
2-Butanone (Methyl Ethyl Ketone)	94
cis-1,2-Dichloroethene	92
Tetrahydrofuran	94
Chloroform	93
1,1,1-Trichloroethane	95
Cyclohexane	91
Carbon Tetrachloride	96
2,2,4-Trimethylpentane	88
Benzene	93
1,2-Dichloroethane	99
Heptane	95
Trichloroethene	94
1,2-Dichloropropane	94
1,4-Dioxane	94
Bromodichloromethane	97
cis-1,3-Dichloropropene	95
4-Methyl-2-pentanone	92
Toluene	89
trans-1,3-Dichloropropene	98
1,1,2-Trichloroethane	97
Tetrachloroethene	94



### Client Sample ID: LCS Lab ID#: 1011264-08A

### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 3111604 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 11/16/10 10:25 AM

Compound	%Recovery
2-Hexanone	99
Dibromochloromethane	98
1,2-Dibromoethane (EDB)	99
Chlorobenzene	96
Ethyl Benzene	95
m,p-Xylene	95
o-Xylene	94
Styrene	96
Bromoform	96
Cumene	92
1,1,2,2-Tetrachloroethane	95
Propylbenzene	93
4-Ethyltoluene	94
1,3,5-Trimethylbenzene	94
1,2,4-Trimethylbenzene	94
1,3-Dichlorobenzene	92
1,4-Dichlorobenzene	94
alpha-Chlorotoluene	93
1,2-Dichlorobenzene	93
1,2,4-Trichlorobenzene	90
Hexachlorobutadiene	91
TPH ref. to Gasoline (MW=100)	Not Spiked

### Container Type: NA - Not Applicable

	wetnoa
%Recovery	Limits
100	70-130
104	70-130
99	70-130
	100 104

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### Client Sample ID: LCSD Lab ID#: 1011264-08AA

### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 3111605 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 11/16/10 10:42 AM

Compound	%Recovery
Freon 12	100
Freon 114	99
Chloromethane	95
Vinyl Chloride	121
1,3-Butadiene	101
Bromomethane	94
Chloroethane	95
Freon 11	98
Ethanol	88
Freon 113	88
1,1-Dichloroethene	88
Acetone	93
2-Propanol	95
Carbon Disulfide	94
3-Chloropropene	94
Methylene Chloride	92
Methyl tert-butyl ether	97
trans-1,2-Dichloroethene	94
Hexane	93
1,1-Dichloroethane	93
2-Butanone (Methyl Ethyl Ketone)	94
cis-1,2-Dichloroethene	93
Tetrahydrofuran	95
Chloroform	94
1,1,1-Trichloroethane	96
Cyclohexane	94
Carbon Tetrachloride	97
2,2,4-Trimethylpentane	98
Benzene	96
1,2-Dichloroethane	100
Heptane	98
Trichloroethene	97
1,2-Dichloropropane	95
1,4-Dioxane	96
Bromodichloromethane	96
cis-1,3-Dichloropropene	96
4-Methyl-2-pentanone	94
Toluene	92
trans-1,3-Dichloropropene	96
1,1,2-Trichloroethane	97
Tetrachloroethene	95



### Client Sample ID: LCSD Lab ID#: 1011264-08AA

### MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name: 3111605 Date of Collection: NA
Dil. Factor: 1.00 Date of Analysis: 11/16/10 10:42 AM

Compound	%Recovery
2-Hexanone	99
Dibromochloromethane	98
1,2-Dibromoethane (EDB)	100
Chlorobenzene	99
Ethyl Benzene	98
m,p-Xylene	98
o-Xylene	97
Styrene	98
Bromoform	98
Cumene	96
1,1,2,2-Tetrachloroethane	99
Propylbenzene	97
4-Ethyltoluene	98
1,3,5-Trimethylbenzene	98
1,2,4-Trimethylbenzene	98
1,3-Dichlorobenzene	97
1,4-Dichlorobenzene	100
alpha-Chlorotoluene	97
1,2-Dichlorobenzene	100
1,2,4-Trichlorobenzene	98
Hexachlorobutadiene	99
TPH ref. to Gasoline (MW=100)	Not Spiked

### Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	100	70-130

## CHAIN-OF-CUSTODY RECORD

Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnity Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B (916) 985-1000 FAX (916) 985-1020 FOLSOM, CA 95630-4719

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11/23/2010 Mr. Mathew Webb ARCADIS, Inc. 801 Corporate Drive Suite 300 Raleigh NC 27607

Project Name: Ashland Greensboro Project #: 0H004000.NC04.11301

Workorder #: 1011267

Dear Mr. Mathew Webb

The following report includes the data for the above referenced project for sample(s) received on 11/11/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-17 VI are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Ausha Scott at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Ausha Scott

**Project Manager** 



### **WORK ORDER #:** 1011267

### Work Order Summary

CLIENT:

Mr. Mathew Webb

ARCADIS, Inc.

801 Corporate Drive

Suite 300

Raleigh, NC 27607

PHONE:

919-854-1282

FAX:

DATE RECEIVED:

11/11/2010

DATE COMPLETED:

11/22/2010

BILL TO: Accounts Payable

ARCADIS, Inc.

640 Plaza Drive

Suite 130

Highlands Ranch, CO 80129

P.O. #

OH004000.NC04.11301

PROJECT #

0H004000.NC04.11301 Ashland

CONTACT:

Greensboro Ausha Scott

FRACTION #	NAME	<u>TEST</u>
01A	P1	Modified TO-17 VI
02A	P2	Modified TO-17 VI
03A	P2 (dup)	Modified TO-17 VI
04A	P4	Modified TO-17 VI
05A	P5	Modified TO-17 VI
06A	Lab Blank	Modified TO-17 VI
07A	CCV	Modified TO-17 VI

CERTIFIED BY:

Sinda S. Fruman

11/23/10 DATE:

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719

Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act, Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/11

Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

This report shall not be reproduced, except in full, without the written approval of Air Toxics Ltd.

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### LABORATORY NARRATIVE EPA Method TO-17 ARCADIS, Inc. Workorder# 1011267

Five TO-17 VI Tube samples were received on November 11, 2010. The laboratory performed the analysis via EPA Method TO-17 using GC/MS in the full scan mode. TO-17 sorbent tubes are thermally desorbed onto a secondary trap. The trap is thermally desorbed to elute the components into the GC/MS system for further separation.

### Receiving Notes

There were no receiving discrepancies.

### **Analytical Notes**

A sampling volume of 0.300 L was used to convert ng to ug/m3 for the associated Lab Blank.

Sample P5 was analyzed 4 minutes past a 24 hour clock time.

### **Definition of Data Qualifying Flags**

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

- B Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
  - J Estimated value.
  - E Exceeds instrument calibration range.
  - S Saturated peak.
  - Q Exceeds quality control limits.
  - U Compound analyzed for but not detected above the reporting limit.
  - UJ- Non-detected compound associated with low bias in the CCV
  - N The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

- a-File was requantified
- b-File was quantified by a second column and detector
- r1-File was requantified for the purpose of reissue



### **Summary of Detected Compounds EPA METHOD TO-17**

Client Sample ID: P1

Lab ID#: 1011267-01A

No Detections Were Found.

Client Sample ID: P2

Lab ID#: 1011267-02A

No Detections Were Found.

Client Sample ID: P2 (dup)

Lab ID#: 1011267-03A

No Detections Were Found.

Client Sample ID: P4

Lab ID#: 1011267-04A

No Detections Were Found.

Client Sample ID: P5

Lab ID#: 1011267-05A

No Detections Were Found.



Client Sample ID: P1 Lab ID#: 1011267-01A EPA METHOD TO-17

File Name:	11111731	Date of Extraction: NADate of Collection: 11/9/10 1:22:00 PM
Dil. Factor:	1.00	Date of Analysis: 11/18/10 03:17 AM

	Rpt. Limit	Rpt. Limit	Amount	Amount
Compound	(ng)	(ug/m3)	(ng)	(ug/m3)
TPH (Diesel Range)	1000	3300	Not Detected	Not Detected



Client Sample ID: P2 Lab ID#: 1011267-02A EPA METHOD TO-17

1	File Name		
- 1	File Name:	11111732	Date of Extraction: NADate of Collection: 11/9/10 3:55:00 PM
	Dil. Factor:	1.00	Date of Analysis: 11/18/10 03:56 AM

	Rpt. Limit	Rpt. Limit	Amount	Amount
Compound	(ng)	(ug/m3)	(ng)	(ug/m3)
TPH (Diesel Range)	1000	3300	Not Detected	Not Detected



Client Sample ID: P2 (dup) Lab ID#: 1011267-03A

**EPA METHOD TO-17** 

File Name: Dil. Factor:	11111733 Date		te of Collection: 11/1 te of Analysis: 11/18	
Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
TPH (Diesel Range)	1000	3300	Not Detected	Not Detected



Client Sample ID: P4 Lab ID#: 1011267-04A EPA METHOD TO-17

File Name: 11111734 Date of Extraction: NaDate of Collection: 11/9/10 4:04:00 PM
Dil. Factor: 1.00 Date of Analysis: 11/18/10 05:14 AM

CompoundRpt. Limit (ng)Rpt. Limit (ug/m3)Amount (ng)Amount (ug/m3)TPH (Diesel Range)10003300Not DetectedNot Detected



Client Sample ID: P5 Lab ID#: 1011267-05A EPA METHOD TO-17

File Name: Dil. Factor:	11111735 Dat	te of Extraction: NADat Dat	e of Collection: 11/9 e of Analysis: 11/18	
Compound	Rpt. Limit (ng)	Rpt. Limit (ug/m3)	Amount (ng)	Amount (ug/m3)
TPH (Diesel Range)	1000	3300	Not Detected	Not Detected



Client Sample ID: Lab Blank

Lab ID#: 1011267-06A

**EPA METHOD TO-17** 

File Name: Dil. Factor:

11111718a

Date of Extraction: NADate of Collection: NA

1.00

Date of Analysis: 11/17/10 07:07 PM

Rpt. Limit Rpt. Limit **Amount** Compound (ng) (ug/m3) (ng) (ug/m3) TPH (Diesel Range) Not Detected 1000 3300 Not Detected

Air Sample Volume(L): 0.300

Container Type: NA - Not Applicable



Client Sample ID: CCV Lab ID#: 1011267-07A

**EPA METHOD TO-17** 

File Name:

11111717 Date of Extraction: NADate of Collection: NA

Dil. Factor:

1.00

Date of Analysis: 11/17/10 06:30 PM

Compound

%Recovery

TPH (Diesel Range)

102

Air Sample Volume(L): 1.00

Container Type: NA - Not Applicable

### **ARCADIS**

### Attachment 3

Johnson and Ettinger Vapor Intrusion Model Spreadsheets

Table 3.1-3
Intercalculations
USEPA Spreadsheets for the Johnson and Ettinger Vapor Intrusion Model
Resident Receptor
Ashland Greensboro Near Stream
Greensboro, North Carolina

				Vadose				Exponent of				
	Enthalpy of	Henry's law	Henry's law	zone		Average	Crack	equivalent		Infinite		
	vaporization a	constant at	constant at	effective	Source	vapor	effective	foundation		sonrce	Cuit	
	ave. soil	ave. soil	ave. soil	diffusion	vapor	flow rate	diffusion	Peclet		bldg.	risk	Reference
	temperature,	temperature, temperature, temperature,	temperature,	coefficient,	conc.,	into bldg.,	coefficient,	number,		conc.,	factor,	conc.,
	ΔH <sub>v.TS</sub>	H <sub>TS</sub>	H' <sub>TS</sub>	D <sup>eff</sup> v	Csource	Q	D <sub>crack</sub>	exp(Pe <sup>f</sup> )	ಶ	Cbuilding	URF	RfC
CAS Num Constituent	(cal/mol)	(cal/mol) (atm-m³/mol) (unitless)	(unitless)	(cm <sup>2</sup> /s)	(µg/m³)	(cm <sub>3</sub> /s)	(cm <sup>2</sup> /s)	(unitless)		(µg/m³)	(μg/m³) <sup>-1</sup>	(mg/m <sub>3</sub> )

												ı	1
67663	Chloroform	7,482	2.59E-03	1.09E-01	4.84E-03	1.40E+01	1.59E+00	4.84E-03	3.66E+03	9.06E-05	1.27E-03	2.3E-05	9.8E-02
75343	1,1-Dichloroethane	7,373	3.99E-03	1.67E-01	5.27E-03	4.40E+02	1.59E+00	5.27E-03	ı .	9.09E-05	4.00E-02	1.6E-06	AN
75354	1-	6,346	1.94E-02	8.16E-01	5.43E-03	2.70E+03	1.59E+00	5.43E-03	1.50E+03	9.10E-05	2.46E-01	٧	2.0E-01
127184	Tetrachloroethene	9,482	1.14E-02	4.78E-01	3.18E-03	1.70E+03	1.59E+00	3.18E-03	2.70E+05	8.90E-05	1.51E-01	5.9E-06	2.7E-01
79016	Trichloroethene	8,470	6.64E-03	2.79E-01	4.32E-03	1.50E+02	1.59E+00	4.32E-03	9.83E+03	9.03E-05	1.35E-02	2.0E-06	NA
120821	1,2,4-Trichlorobenzene	13,150	7.70E-04	3.23E-02	2.50E-03	1.50E+02	1.59E+00	2.50E-03	8.23E+06	8.78E-05	1.32E-02	AN	2.0E-03
95636	1,2,4-Trimethylbenzene	11,604	3.59E-03	1.51E-01	3.82E-03	7.00E+00	1.59E+00	3.82E-03	3.30E+04	8.98E-05	6.29E-04	ΝΑ	7.0E-03

### Table 3.1-4 Summary of Results USEPA Spreadsheets for the Johnson and Ettinger Vapor Intrusion Model Resident Receptor Ashland Greensboro Near Stream Greensboro, North Carolina

CAS Number	Constituent	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
67663	Chloroform	1.2E-08	0.000012
75343	1,1-Dichloroethane	2.6E-08	NA
75354	1,1-Dichloroethene	NA	0.0012
127184	Tetrachloroethene	3.7E-07	0.00054
79016	Trichloroethene	1.1E-08	NA
120821	1,2,4-Trichlorobenzene	NA	0.0063
95636	1,2,4-Trimethylbenzene	NA	0.000086

4E-07

0.008

**TOTAL** 

### SORBENT SAMPLE COLLECTION

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*Reconstitution continue* 

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(916) 985-1000 FAX (916) 985-1020 180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA 95630-4719 Page\_ <u>'</u>으

Ony Tellex	Lab Shipper Name Air Bill #		Relinquished by: (signature) Date/Time F	Relinquished by: (signature) Date/Time	12:110/13		SANGE TO 10	<u> </u>	05A P5 (C	MA PH (1)	OSA $P2$ $(dco)$ $C$	02A P2 62	DIA PI	Lab I.D. Field Sample I.D. (Location)	15	_	Composed by (Filling and Signiff See 19 19 19 19 19 19 19 19 19 19 19 19 19	- 1
			Received by: (signature)	Received by: (signature)	Received by: (signature)				60143629	(0/48347	GO132063	6013536	60143453	Tube # / Cartridge #	- 2-448	Email 1 Yan griver or all com		MAXT Call
4.300	Temp (°C)		- 1		2				F				MAIIO	Date of Collection				
670			Date/Time	Date/Time	Date/Time				17:50	16:04	16:06	15:55	13:22	Start Time	Project Name Ashlevel	Project # (	P.O. #	Project Info:
noval	Condition				1				17:53	10:07	60.91	15.28	13:25	End Time	ame Ashi	OHOD		ifo:
		Z	A	l p	900 Pr				3.3min	3.3 mim	3.3 min	3.3mm	3.3 mm	Duration	and Go	Project # 0H00400 1101		
Yes No	Custody Seals Intact?	Notes:	Average Flow Rate:	Post-test Flow Rate	Pump Calibration Pre-test Flow Rate:				A				300 m/	Final Volume				
(None	s intact?		Rate:	Rate:	Pre-test Flow Rate:								10-17		specify	Rush	<b>W</b> Normal	Turn Around Time:
1011267	Work Order#				lion							(dro)	1 Deisel Kompcompani	Analysis Requested	ug/m³ mg/m³	bpav bmv		Circle Reporting Units:

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## Air Toxics LTD.

## CHAIN-OF-CUSTODY RECORD

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Collected by: (Print and Sign) Matt Webb Phone 919-854-1282 Address 801 Corporate Court City Radeigh Company Accadis 68M Project Manager RYAN Gelber Relinquished by: (signature) Date/Time Relinquished by: (signature) Relinquished by: (signature) Viatherer 202 Shipper Name Field Sample I.D. (Location) Date/Time Date/Time Fax 914-854-5448 Email [Yan, gerber@arcodisand indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 487-4922 AIT BIII State MC Zip 27607 Received by: (signature) Received by: (signature) Date/Time Received by: (signature) Brown b Duttaken Are 0449 3284 3772 Can # て 予 Temp (°C) of Collection of Collection 11/9/200 13:22 Date/Time Date/Time Project # OHOO HOO NOY! II DI P.O. # Project Name AShloned Greenshove Project Info Good 15.50 25 16:42 7 45 Time Condition 200 70-15\* **Analyses Requested** \* TO-15; VOC; (Fill Scar),

\* TO-15; VOC; (Fill Scar),

TPH gasaling rayon Custody Seals Intact? Yes No (None Rush Turn Around Normal Normal 75 なな 29 8 28 -5.5 Initial Canister Pressure/Vacuum -45 6,0 70 Lab Use Only Date Final Work Order # Pressurized by: Pressurization Gas: Page\_\_ 011264Receipt cityanits <u></u> of Final (psi)

Form 1293 rev.11

Only Use

Lab

# CHAIN-OF-CUSTODY RECORD

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	Rate:	Post-test Flow Rate:	ק		Date/Time		Received by: (signature)	Date/Time	Relinquished by: (signature) ■ Date/Time	delinqui
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Page \_\_\_\_ of

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